

The Bohning Company, Ltd.

A RETAP Success Story



Case Study

The Bohning Company, Ltd. – Lake City, Michigan

The Bohning Company was founded in 1946 when Mr. Rollin Bohning developed an adhesive that he used to bond broadheads to archery hunting shafts. Mr. Rollin Bohning was an avid archer and a research chemist by profession. By establishing this company, he provided a resource for other hunters to acquire the materials and supplies they needed. The Bohning Company now sells many products ranging from archery and golf equipment to Christmas tree colorant. The company is one of the largest employers in Missaukee County, employing 40 full-time employees and approximately 15 temporary employees. Some of the temporary employees include local high school and college interns.

In October, 1994, the Bohning Company invited a team from the Retired Engineer Technical Assistance Program (RETAP) to conduct a waste reduction assessment of their operations. Through RETAP, retired

professionals provide on-site assistance to identify waste reduction and energy efficiency opportunities for Michigan's small businesses. This service is offered by the Michigan Department of Environmental Quality and is nonregulatory, confidential, and free of charge. For more information on RETAP, call 1-800-662-9278.

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REDUCE

Mr. Rollin Bohning enjoyed nature and was willing to contribute in any way to preserve the environment. For example, none of the buildings in the company have drains in the floor. This was done so that if a spill was to occur, the chemicals would not enter the soil and groundwater. Environmental stewardship was also a personal concern since Mr. Bohning's residence was adjacent to the plant. The Bohning Company started responsibly and has continued that tradition by consistently making improvements to reduce the amount of waste generated during production. Zero waste is the ultimate goal. Larry Griffith, President, said that the pollution prevention activities have come in "lurches." Mr. Griffith explained this by saying that the company takes pollution prevention steps whenever possible.



Clam Shell Packaging

The Bohning Company now uses clam shell packaging instead of the bubble packs that had previously been used for many products. This new packaging requires less space and is lighter in weight. The card backing that was used for the bubble packaging was a heavy paperboard, while the card that is now inside the clam shell is much lighter in weight and is significantly smaller. The clam

shell packaging being used by the company has four different sizes. Although this packaging is initially more expensive, overall it is more cost efficient. The smaller size of the packaging has made shipping the products much easier and less costly. The clam shell packaging can also be ordered in smaller shipments which results in a smaller inventory and smaller initial investment.

New Equipment

Equipment changes have saved the company thousands of dollars. A Textite bowstring wax production unit designed and crafted by a Bohning employee has doubled production while decreasing power requirements by 30%. This unit replaced equipment installed in the late 1950's and takes into account changes in wax formulations resulting in lower melting temperatures. The new design also provides more efficient cool down and quicker start-up of the new unit.

Heat Exchanger

A heat exchanger was installed to save energy and has been successful. Although efficient, additional heat exchangers have not been added in Bohning due to the plant's isolated location. The company is in a remote area where service for the heat exchanger equipment is not readily available. The equipment warranty is not valid if the equipment is not regularly checked by one of the manufacturer's staff members, and this has discouraged further heat exchanger use at Bohning.

Lighting

Sodium lights are used instead of fluorescent lights to illuminate particular areas in the north plant and the newest part of the paint building. The sodium power lights are able to produce more light with less electricity, making them more cost efficient.

Vane-Cutting Operation

A vane is the plastic composite material that is used instead of a feather on archery arrows. The Bohning Company uses an extruder to produce a long ribbon of the plastic material; another machine then cuts the ribbon into vanes. The vane-cutting machines use knife bases of six different sizes to hold the cutting knives. The knives are made by the machine operators as needed. One set (6) of knife bases existed at the time of the RETAP assessment. If knife replacement was required while a job was running, the machine had to be stopped until the replacement knives were fabricated. Knife fabrication time can vary from 15 minutes to 1 hour depending on the operator's skill level. The RETAP assessment team suggested that an additional set of knife bases and cutters be fabricated so the down-time of the vane-cutting machine could be reduced. The RETAP team also suggested retooling the tape extruders and vane-cutters to use a narrower tape. The Bohning Company now contracts out the fabrication of the knife bases and is currently looking

into a circular die base. This die base would require narrower tape and would also change the way the vanes would be cut. This would significantly reduce the volume of scraps produced during the cutting process.

REUSE

The Bohning Company recycles office paper along with their old corrugated containers (OCC) which has led to a decrease in landfilling. Not only does the company recycle its paper, but some of the office paper is reused by day care centers in the local area. The President of the company, Larry Griffith, said, "We keep four day cares happy." This reuse totals approximately 500 pages per month. Additional items that are given to the community include 55-gallon fiber drums and wooden pallets. The Bohning Company gives approximately 150 drums and 200 to 300 pallets to the rural community each year.



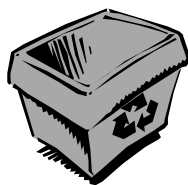
Waste Solvents

Solvents at the Bohning Company are reused whenever possible. Waste solvent is sometimes generated when solvents damaged in shipment due to temperature extremes are returned to Bohning. This solvent, as well as a small amount of extra solvent that cannot be used in process, makes up the majority of waste solvent needing disposal. This solvent cannot be reused and is

shipped out to a facility in Indiana and burned in a kiln furnace to produce energy. This reuse has eliminated disposal of an otherwise hazardous waste.

RECYCLE

During the RETAP pre-assessment interview, it was suggested that the company's OCC could be recycled rather than landfilled. By the time the actual assessment had begun, the company had implemented the OCC recycling program which reduced the cost of disposal from \$424 in April, 1994, to \$235 in November, 1994. Over the past three years the company has saved close to \$6500 on their disposal bills.



Zero Waste Goal

In October, 1994, Larry Griffith, President, sent a memo to all employees establishing the goal of attaining "zero waste" to be landfilled by the company. In late 1994 the company began depressurizing spray cans and placed recycling bins in the break rooms. Also, magazine recycling was given high visibility. The company encouraged employees to bring recyclable items from home. Many of the employees brought in their old magazines to be recycled. The magazine recycling became a big project. Unfortunately, the isolated

location of the Bohning Company caused some challenges in shipping and getting recyclables to markets. The recycling center that accepted magazines was only open on Saturdays. As volume grew, the program became too large to maintain and was ended.

An employee, Suz Knapp, was able to make arrangements to have the OCC and the office paper picked up free of charge. This continued until paper prices dropped causing a charge for pickup to be reinstated. This cost is still less than the cost of disposal. As a result of these OCC recycling activities, in February, 1995, the Bohning Company went from dumping two 6-yard dumpsters weekly to two 4-yard dumpsters weekly. Disposal cost was further reduced from \$235 (November, 1994) to \$150 per month for a period of six months. Since the RETAP assessment in October, 1994, the company has realized a disposal cost savings of approximately \$2,200 per year. For a small company this is a big savings, and they are not finished trying to achieve "zero waste."

